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AUTHOR Villar, Luis M.
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ABSTRACT

In this 2-year collaborative research study, ethnographic and quantitative methodologies were used to explore the nature of professors' classroom teaching contexts and the relationships between classroom actions and student teachers' classroom climate perceptions. Data for case studies of four College of Education professors associated with the University of Sevilla (Spain) came from observations, student teachers' perceptions as indicated on the Inventory of University Classroom Environment (IUCE), and interviews with the professors. The IUCE measured cohesiveness, satisfaction, personalization, task orientation, innovation, evaluation, and classroom management. Results indicated that student teachers perceived their classes as being higher in control than was desired, and they preferred a less routinized classroom management style. Mathematics teaching was more professor-centered than pedagogy classes, and math professors followed scripted lesson plans while pedagogy professors displayed improvisational performances. The study recommends that university staff development offerings emphasize generic pedagogy such as clinical teaching, cooperative learning, and classroom management. (Contains 34 references.) (JDD)

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REFLECTIONS ON ACTION BY UNIVERSITY TEACHER TRAINERS

Luis M. Villar

Doctor in Education. Professor of Didactics. Facultad de Ciencias de la Educación. University of Sevilla. San Francisco Javier, s/n, 41005-Sevilla. (95) 4557733. Fax (95) 4557817 (Spain).

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Abstract- In this longitudinal collaborative research, a triangulation of ethnographic and quantitative methodologies were used to explore the nature of four professors' classroom teaching contexts and the relationships between classroom actions and student teachers' classroom climate perceptions. Case studies of four College of Education professors based on observations, student teachers' perceptions and interviews were completed. Results from the interpretation of data revealed that each two professors had a dominant style of teaching: professor-centered vs. student-centered, and content-oriented vs. process-oriented goals. Discussion centered on the meaning of the results for improving teacher education.

INTRODUCTION

Background Assumptions

In response to demands for improved university teaching standards, Spanish universities have adopted different questionnaires of evaluation of university staff. Some universities, such as the universities of Santiago and Granada, are using behavioral inventaries to assess the competence of university professors. That evaluation approach came at a time when the Education White Book, edited by the Ministry of Education, was advocating a view of the non university teacher as a reflective professional (Ministerio de Educación y Ciencia, 1989a: 210).

The Purpose of Teacher Evaluation

Interest in assessment for the purpose of **organizational development** of university teacher trainers has been increasing in our educational authorities. Such evaluation has as its main concern the collection of data to emphasize the priorities and organization of the University as an institution. Thus, teacher evaluation serves the accountability purpose, that is, determine the extent to which university teachers have achieved performance standards. Our contention is that evaluation is important, not just for the achievement of the prescribed competences of the University, but for the **professional and personal development** of the professors. In this sense, three justifications for the formative evaluation of university teacher trainers can be identified.

First concerned the very nature of the teaching profession. One essential dimension of the teaching profession is a body of knowledge based upon reflection. It was expected that members of the training institutions will remain abreast of innovations. Peterson and Comeaux (1990, 4) have considered teacher evaluation as an opportunity for reflection, and the Ministry of Education's White Book has emphasized the need for teachers to engage in reflective practice, in order to become a professional teacher. For Schön (1983, 1987) reflection-in-action was a way of combining theory and practice, and as such, changed the traditional, positivistic orientation of knowledge. Schön's concern was to formulate a theory of action, an epistemology of practice. Schön has stated that the realm of practice should take on more importance and priority in teacher training centers, and for this purpose, internships should be created to aid teachers as training laboratories, where knowledge of practice could be introduced, and teachers' tacit knowledge made explicit (Villar, 1988a).

Second, evaluation feedback can be a challenge for college supervisors. A Ministry of Education's proposal has called for reforming the system of teacher education that will involve, among other plans, new reliance on assessment of the knowledge and performance of graduates (Ministerio de Educación y Ciencia, 1989b). Thus, College of Education professors will experience an evaluation approach that they should put into practice with beginning teachers. Evaluation of new teachers need to be improved, and developing good assessment practices in college supervisors is a way to reform

evaluation of all beginning and in-service teachers. However, the context in which college supervisors work may affect supervisors' reflection. Teacher training institutions, as organized bureaucracies, so far limited professors' reflective practice.

The third reason why professor development is important deals with University mandates. For example, the University of Granada's statutes require professors be biennially evaluated by students. Neither they indicate nor recognize that professors need new procedures of assistence in their professional roles and interpersonal skills. However, certain professional mechanisms are utilized as a means for stimulating Spanish university professors development: job promotion, merit pay and staff development activities.

Professor Development Process

Professor development is a complex set of activities. Student teacher supervisors need some kind of training design, more than a set of recipes of success, to get involved in personal improvement efforts. One desirable characteristic of a training process is the individual professor, while teaching, trying to do the best job of educating prospective teachers. Professors understand university teaching to be a craft, learned on the job. They have not had preservice training. While teaching in the College of Education, they build a commom language about teaching and teacher training, although it is not always assumed for their own teaching. We assumed that learning to teach at the university level is a process of internalization of "interpsychological processes" in which either a single professor or small groups of faculty personal construct educational knowledge. Professors were often isolated from each other. Such isolation prevented them from receiving valuable feedback from other colleagues who might assist them in solving shared problems. A need for more opportunities to observe other professors at work seems necessary. Therefore, we assume that low-risk strategies such as the following could be applied:

> "Cognitive coaching" (collegial dialogues) provide comfortable settings for teachers to interact" (Strong, et al., 1990: 28).

Finally, the research process set up in this study tries to incorporate some attributes of successful development workshops (Loucks-Horsley, et al., 1987). The following characteristics are included:

* Collaboration between investigator and professors.
* Knowledge basis of supervision skills.
* Professors involvement for decision making.
* Time to reflect on university teaching practice.
* Coaching for application of the desired practice in the College of Education setting.

Assessing College of Education Classroom Environment

One key question for teacher education programs concerns what type of professor training should be used to facilitate the acquisition of relevant supervisory skills. One factor not investigated is the effect which preservice teachers' perceptions of classroom learning environment could have on the analysis of such skills. Although there have been studies employing student classroom environment perception data, research using prospective teachers' perceptions to assess professors' interactive teaching has been scarce.

The results of the Waxman and Duschl's (1987) research suggested that

> "there is considerable potential for introducing preservice teachers to classroom instruments in order to provide them with a tangible means of obtaining feedback about and guiding improvements in their teaching" (p. 77).

If we introduce instruments in teacher education programs to obtain feedback information for supervising student teachers during the student teaching, commitment to use preservice teachers classroom environment perceptions to improve College teaching should be invoked (Villar, 1988c). The instruments that measure learning environments are often related to Moos' theoretical framework. One dimension designed by Moos for the human environments was relationship. Classroom interactive teaching can be seen as professor-student teachers social relations. Wubbels, Brekelmans and Hermans (1987) concluded in their study with a sample of secondary education classes that

> "students' perceptions of interactional teacher behavior are a better measure of the quality of a teacher's teaching" (p. 23).

This result also suggested that teachers should be engaged in training courses involving the use of learning environment instruments. Fraser, Treagust, Williamson and Tobin (1987) have developed an instrument (CUCEI) to assess students' perceptions of classroom psychosocial environment in university and college classrooms. They concluded, among other things, the following:

> "One of the most promising and potentially useful applications of the CUCEI would be in generating feedback information which can be employed as a basis for reflection upon, discussion of, and systematic attempts to improved classroom environments" (p. 26).

Similarly, Villar (1987) developed the IUCE to describe and compare the classroom learning climate of Colleges of Education, and concluded:

> "The primary purpose for classroom environment assessment obtained by using the IUCE is clearly aimed at training" (p. 46).

Purpose of the study

The purpose of this study is to investigate the usefulness of the IUCE instrument in helping College of Education professors analyze their own interactive teaching. More specifically, I wanted to show the following aspects of College of Education's classroom interactive teaching:

1. The form reflection-on-action takes among four professors of the College of Education at the University of Sevilla.

2. Develop a training process (practicum) between an investigator (coach) and the four professors who participated in the study.

METHOD

Participants and Setting

The college site, as well as the professors and student teachers in the observed classrooms, were chosen in a purpose manner (Miles and Huberman, 1984) during a research prior to the study proper (Villar, 1987). The previous research served several functions, being the most important, that a trusting, professor-investigator and university students-researcher collaborative relationship was built. The four university supervisors taught at two Colleges of Education (three in the public College of Education and one in the private training institution run by the Catholic church) attached to the University of Sevilla. Three were female professors and one was male professor. Each professor volunteered to participate in the study. Two specific subject areas were selected for study: Mathematics Teaching and Pedagogy.

Two academic year courses were spent in doing the following research activities: observing each professor in the College classroom, taking field notes on the College context, measuring preservice teachers' perceptions of their classroom learning environment, and interviewing professors. Observers, also were university students from a Teacher Education course at the University of Sevilla.

Two intervention and improvement strategies were selected for the researcher, acting as an external assistant: the facilitative provided the professor with trust and support. The researcher was available for instructional consultation in a nonjudgmental context. He also intervened **conceptually** by assisting professors to see relationships between protocol data and prospective teachers' perceptions. The technical and psychological support given to teacher trainers seemed necessary for the kind of professor development program I wanted to integrate (Stevenson, 1987).

Data collection

Grounded theory as qualitative research. A triangulation or mixed-method expansion design strategy (Greene, Caracelli and Graham, 1989: 269) in order to collect data was employed: participant observation, deep interview and student teachers' perceptions of psychosocial classroom learning environment. Each professor was considered a case study, so to give the conceptual framework or implicit theory of each one. Some data (taped interviews and hand-written field notes) were transformed in accurate, typed protocols. These accounts were revised and corrected by all four professors. This information was combined with the environment profiles based on student teachers' responses to the IUCE. The two research methodologies (qualitative and quantitative) had also been used by researchers in the field of learning environments (Fraser and Tobin, 1989).

Studies which use participant observation within the paradigm of teacher thinking are predominantly descriptive, and imply some kind of sociological or psychosocial analysis. Those studies showed the teacher and the contextual variables as crucial elements in the teaching process (Goeth and LeCompte, 1984).

In our study, each professor was observed by a pair of university students. The investigator trained observers to take field notes of the classroom psychosocial relations, and the way professors perceived the ecology of learning in the classroom. The central focus was, then, the qualitative and experiential aspects of the professors and preservice teachers interactive teaching.

University students knew the basis to apply the phenomenography approach to categorize professors' accounts and descriptions of any teaching-learning situation (Marton, 1988). Entry into the lives of the preservice teachers was easier for university students than for the researcher. The social world of the two training institutions was experienced by university students who had different opportunities to interact with the professors and preservice teachers. Each couple of research assistants spent an one-hour period a week in the College of Education classroom.

The interview facilitated the discovery of the meaning that remained implicit in teacher thinking, allowing to understand professors' conceptions of reality and sense, and the significance they assigned to their actions. To understand professors' conceptions of interactive teaching and training, a team composed of university students and the researcher interviewed them following semi-structured interviews. Professors facilitated responses concerning their classroom climate profiles and also clarified field notes taken by classroom observers.

University students were collaborators that had been trained in research methods (Patton, 1983). They all knew the purposes of the research and were supervised while conducting the devised schedule interview. The investigator met all groups of interviewers and decided the list of areas of interest that needed further information. All interviews were tape recorded and lasted one hour each.

College of Education classroom learning environment had been measured by the IUCE ("Inventory of University Classroom Environment"). The learning environment as a construct of multiple traits was summarized in seven independent scales: Cohesiveness, Satisfaction, Personalization, Task Orientation, Innovation, Evaluation and Classroom Managenent. Villar (1987) has demonstrated the reliability and construct validity of students' scores derived from the IUCE scales. The actual and ideal forms of the IUCE were administered two times, one each academic year. Profiles of the two forms were given to professors and prospective teachers.

Data Analysis

Interview and observation data were analyzed using ethnographic techniques designed for the analysis of the 221- page transcribed qualitative data. Professors received transcripts of the first year observations and interviews, made comments on them and modified errors. The responsibility for synthesis of material rested with the researcher in careful dialogue with the professors.

In the first place, AQUAD, a computer coding and retrieval program, was used to code protocols (Huber, 1989). Means and standard deviations for each scale on the two IUCE forms were also computed. Student teachers and professors had a copy of the classroom environment profiles. In the first phase of the qualitative analysis, categories of psychosocial actions in order to compiled professors' behaviors and reflections were identified. This approach emphasized the clustering of material by key themes found in the multitude of statements of the study. Then a case description summarizing each professor's social relations reflections-on-action, following an outline generated from the IUCE seven scales and 49 codes, was prepared. These became the "coding categories" used as a means of further sorting the data (Bogdan and Biklen, 1982, 156).

In the final phase, the researcher examined these case studies for patterns of co-occurrence among reflective phenomena-patterns that displayed the system of believing and acting professors used in the interactive teaching to organize it. (See List of Codes in Appendix. The 49 codes summarize each of the IUCE items).

RESULTS, INTERPRETATIONS AND DISCUSSION

Results are organized as four individual case studies or "scenarios". Partial examples of data processing are given for the four professors. Some observation episodes and extracts are first presented. Afterwards, comments on climate profiles along with excerpts of interviews are shown. The aim is to delineate an overview of the interactive teaching in a particular classroom atmosphere and the professors' reflections evoked in the interview session. Professors will remain identified.

Individual Scenarios and Profiles

Victoria's Theory of Action

Victoria's focus toward cognitive processes and forms of knowledge was engaged in the development of methods to describe patterns of children thought and knowledge (Putnam, Lampert and Peterson, 1990). In her Mathematics Teaching class she hypothesized how children learn by means of knowledge structures. In her class, puzzle-like tasks were a kind of problem solving teaching strategy commonly used:

> *Victoria: "Now, close your eyes one minute and give me an example of a textbook picture representing the substraction concept".*
> *Class: (Silence).*
> *Victoria: "Imagine you are going to write a textbook, what kind of pictures would you draw?".* (Observation #005, Lines 88-95, 20/1/88).

Her constructivist position led her to consider student teachers as researchers who had to discover external symbolic representations to express mathematical ideas. Content lessons observed described knowledge underlying tasks involving addition and subtraction of numbers. She simulated cases of children trying to understand math operations. Victoria's inquiry skills and student teachers' silence as response behavior became the core scenario. Stimuli in the form of prompt questions to provoke student participation were added to the setting to form the interactive teaching basis.

Observations relating to climate scales. The interpretation of the results for the comparison of student actual and student ideal forms in the 1988 year course was that students preferred a more favorable classroom environment than they perceived as being actually present on six of the seven dimensions assessed by the IUCE. In fact students preferred greater **Cohesiveness**, **Satisfaction**, **Personalization**, **Task Orientation**, **Innovation**, and **Evaluation**; on the other hand, **Classroom Management** was perceived higher in the actual than in the ideal form. These findings were replicated in the classroom in the following year. (Classroom Management is a composite of the following items: 7. "The relationships in the class are exclusively academic"; 14. "In this classroom, it is noticeable that the professor must rush to accomplish the requirements imposed in the program"; 21. "In this classroom, the professor monopolizes most of the verbal communication"; 28. "In this classroom, the content of the subject being taught is not presented in a logical way which tends to disconcert the students"; 35. "In this classroom, the professor always reports to the students on procedures which will help develop teaching". 42. "Besides reading, no other activity is carried out in class". 49. "In this classroom, the questions asked of the students provoke one-syllable answers)".

Cohesiveness and **Personalization** were the highest real scales scored by student teachers. These climate student perception results coincided with notes taken by observers and judgements of the researcher. Codes 29 AMI ("In this classroom, there is an appreciable friendly relationship between the professor and the students") (observations #002, #008, #011) and 38 PAR ("The professor stimulates the students to participatein the topic being taught") (observation #009) were examples of the kind of atmosphere perceived by research collaborators in the classroom College.

Victoria's theoretical orientation was similar in the two interviews. As it was indicated in the initial interview, she valued an interactive teaching where prospective teachers worked together to

either solve problems or play with materials. Her attitude towards school Math education was more process than product, while her actual teaching was more product than process. Her willingness to share ideas with students contrasted with prospective teachers' perceptions on classroom management. When asked why she exercised classroom control, she responded to the researcher:

> *Victoria: "... control...; I pay attention to students' motivation... I am a very orderly person, I want to have everything which is happening under my control..."* (Interview #001, Lines 95-119, 5/4/1988).

For Victoria, College Math teaching involved a process of clarification and class discussion. She was training Math teachers so that to make possible for them teaching a specific discipline that differed from knowing other curriculum areas. Nevertheless, her teaching "courage" (Lampert, 1990) made her feel being the director of the situation. Earlier attempts to give prospective teachers more responsibility had often resulted in frustration. She was, thus, a business-like kind of professor emphasizing a whole-paced learning environment.

Salvador's Teaching Framework

Few whole-activities were conducted in the 18 observation periods of Salvador's College Math teaching and, when did occur, they were designed to clarify the year planning to prospective teachers. His concepts were based in the Piagetian stage theory. In his teaching talks and quick explanations, the importance of structure and student teachers conceptual knowledge was emphasized. In Salvador's teaching the structure of one lesson may well be representative of the tasks and activities structure that characterized almost all lessons observed.

According to the lesson transcripts, Salvador was about defining the meaning of knowing mathematics (pedagogical content knowledge) and also explaining concepts of the specific subject matter which prospective teachers were to teach (content knowledge). He gave details of the kind of Math knowledge used by school teachers concerning such concepts as addition, subtraction, multiplication and algorithms (the so-called craft knowledge, Leinhardt, 1990).

> *Salvador: "We are going to develop the part-whole concept, because everything is based upon this concept. The first thing is understand when a fraction is used to know the part-whole concept. The first thing to ask is, what is that? (a figure divided into four parts is shown, one fourth) 1/4.*
>
> *We have a whole divided into "congruent" parts. A part of it is taken and then a fraction means the relationship between a part with the others. 1/4 means the symbolic relationship between the taken part and the total. This gives name to the part I am taking. It is supposed that a child should have certain cognitive characteristics before he manages the relationship part-whole. This characteristics are...*
>
> *Student: Please, just a moment...!*
>
> *Salvador: O.K., I will repite again. I am taking about the relationship between part-whole. Lets go listing the following: 1. competency to identify the unit; which is the whole? For example, 3/8. If anyone shows this to a child and asks him how much is the colored part, he might answer = 3/8. We will have in mind, according to Piagetian epistemology, the inclusion part-whole. It might happen that the child does not grasp that..."* (Observation #006, Lines 83-123, 5/5/1988).

In Salvador's class one common sort of student teachers behavior that did not serve well in the creation of math discourse was silence. Salvador's conception of math teaching involved arguing and class silence was a way to disagree with that teaching strategy. Observations relating to climate scales. Profiles of mean actual and ideal classroom environment scores of the 51 students in Salvador's class for each of the seven scales of the IUCE clearly showed that, overall there was remarkable consistency between the shapes of the two forms assessed in the two year courses.

Student teachers' perceptions of the classroom learning environment were related with the observers' field records of the patterns of learning tasks and student teachers engagement in the class.

The higher level of **Classroom Management** perceived in Salvador's 1990 classroom climate assessment matched the large proportion of time which he spent in item 14 of the IUCE: "In this classroom, it is noticeable that the professor must rush to accomplish the requirements imposed in the program". The lower level of actual **Evaluation** perceived in his class was associated partly with the amount of time spent in explaining learning evaluation procedures. Observers did not write any note concerning evaluation, in general. This may explain why student teachers perceived so high such classroom environment dimension. As it happened with Victoria's class there was a difference between the actual and ideal learning environment: ideal **Classroom Management** climate was evaluated lower than the actual. However, for the rest of the six scales there were higher level perceptions of the ideal environment.

Salvador was concerned with the personal meaning that Math content teaching was going to have in student teachers' conceptions. He tried prospective teachers to reflect on College Math teaching content. This is why he asked them questions and promoted classroom discussion. One type of question was the following:

> *"What kinds of problems would you face as school teachers if we select a predetermined strategy to teach the fraction concept?".* (Observation #006, Lines 56-59, 5/5/1988).

Despite the observers had a relatively narrow focus on questioning, many of the question statements were of instructional nature, although simple and short, trying to probe student teachers knowledge or summarize explanations. As can be seen in the following interview excerpt, Salvador' action statements of his College classroom practice indicated a degree of congruence between his theory and action:

> *Researcher: When you teach in the classroom, would you consider too much difficult to reflect-in-action?, and if it were easy, would you remember kinds of reflections you have made while teaching?*
> *Salvador: It is not difficult.*
> *Researcher: While teaching, would you realize that you are thinking-in-action?*
> *Salvador: Yes, it happens to me more often inside the classroom than outside, because out of the classroom I do not have free time to go around thinking on instructional matters. When I am teaching in the classroom I really know that I am making faults, I realize what sort of things should I provoke among the students. If I see them very quiet I think that something is going odd. In other words, changes take place because I see cues that induce me to make on-going decisions... Many instructional decisions are taking along the year interacting with the students in the classroom. This means a different perspective to solve instructional problems. However, there are other "macrodecisions" that are taken outside of the classroom college..."* (Interview #001, Lines 551-586, 14/4/1988).

Based on the interview data, Salvador's reflective thinking was much concerned with thoughts about the teacher education program, deliberations about teaching tactics to be implemented in the school classroom, and reflections on lesson structure.

Pilar's Cooperative Learning

Pilar's College classroom interaction could be considered student-centered instruction. She used a high interpersonal orientation exhibiting a sensitivity to students needs and encouraging them to participate. This kind of atmosphere was characterized by a more personal professor/student teacher orientation, as can be described below, and had in Rogers' writings her fundamental philosophy

(Greeson, 1988). The extent of Pilar's knowledge of student teachers was revealed in the fact that her class was composed of small groups and students had to explain instructional tasks, extra-curricular activities, membership of peer groups, in-class behaviors, attitudes, etc. Information on students was obtained by Pilar using a number of deliberate strategies: asking peers, assignments, in-class observations, informal contacts and examinations. Teaching here was conceived as a kind of "negociation" (Prawat, 1989: 321) where professor and student teachers were reasoning together.

Observations relating to climate scales. The most striking pattern is that the climate in the ideal version emerged as more favorable than the environment of any of the other six types of scales. The only exception to this overall trend emerges in the **Classroom Management** dimension in that this scale is higher in the actual than in the ideal classroom college. Thus, the 33 students enrolled in the General Psychology class preferred greater **Cohesiveness**, **Satisfaction**, **Personalization**, **Task Orientation**, **Innovation** and **Evaluation**.

Although differences within the actual form are tenuous, it is apparent the predominant **Personalization** dimension. In fact, the higher score accurately reflects students' perception of the private College of Education culture. Pilar tried to maintain a climate in her classroom similar to the predominantly recommended College environment. Pilar's **Personalization** climate feature is composed of the following items: 3. "In this classroom, each student is allowed to work at his/her speed" (Observation #008, Lines 60-63, 4/2/1988: "Each one has to observe school classroom work, and to reflect on it lately"); 10. "The professor speaks frankly and openly with the students" (Observation #002, Lines 114-116, 12/1/89: "No, I can't ask all members of the group, because you know that there are people who do more tasks than others"; 17. "In this classroom, there is a large variety of textbooks on the subject being taught" (Observation #006, Lines 36-43, 17/1/89: "Good! Looking at those topics you may choose from TV reports, stories, child drawings, child literature, newspapers, that you may find in the College library..."; 24. "The professor trusts in the students' good judgement" (Observation #010, Lines 31-41, 7/3/1989: "(A prospective teacher is talking about language acquisition, in front of the rest of the class)... Pilar said: -'Diego is going well playing the rol of a teacher'"; 31. "In this classroom, new work methods arise out of the experience the students have of concrete alternatives" (Observation #001, Lines 83-85, 21/1/1988: "(For her class composed of 33 student teachers she has split it out in five groups). Pilar has asked the groups to describe what a child is from many viewpoints"; 38. The professor stimulates the students to participate in the topic being taught" (Observation #006, Lines 51-55, 17/1/89: "The design you are going to use should be a group decision, not an individual one. This is important; if you are going to do anything, you as a group must be in agreement"; 45. "The professor is honestly concerned about the students" (Observation #009, Lines 42-44, 12/1/89: "All groups will have to pass me a report of their tasks...; we need to know what is our best way of working and studying").

Stimulated recall in the ethnographic interview abounded with declarative statements what student teachers perceived of Pilar's **Personalization** dimension. Her responses were complex sequences of teaching principles of College actual practice. As an evidence example, a focus on **Personalization** is selected:

> *Interviewer: I would like to ask you about Personalization... Student teachers think Personalization is the most important variable...*
> *.../...*
> *Pilar: You know that Personalization as a concept that appears in the College propaganda... I am not very strict with due dates for paper presentations ... At the beginning of the academic course we set up a compromise... At the end of the course I assess instructional tasks according to the competency level they have demonstrated... Readings are assigned individually...* (Interview #001, Lines 256-347, 3/12/1987).

Marisol's Social Organization in the Classroom

The social organization was constructed jointly by Marisol and her student teachers. Marisol believed training competent teachers needed to know better prospective teachers teaching at school. To accomplish this, she observed and talked with them during school teaching practice time. She had the belief that she kept good relations with the students along the College year:

> *Marisol: ...For me, a fundamental objective is communication. I stress professor-student teacher relationships, and also relationships among student teachers, because College professors ought to have an educating focus of their interactive teaching.* (Interview #001, Lines 52-62, 22/6/1988).

Excerpts from observers' field notes substantiated Marisol's intention to make the classroom atmosphere open. A narrative vignette of Marisol's College of Education lessons could be synthesized as the following:

> *Observer: She (Marisol) is giving lesson notes on Bloom's taxonomy; she asks questions, fosters student participation, although student involvement is very rare; she introduces the topic, explains concepts and afterwards she proposes practical activities for the groups.* (Observation #002, Lines 9-27, 11/1/1988). *The activity is in groups. Each group is composed of three to four students. Exercises are corrected in class. Students confront their answers. Arguing is a commom kind of interaction. A few students ask in a voluntarily basis. Some times there is confusion, because all students want to talk simultaneously. Marisol occasionally induces the correct answer. The one-hour lesson is devoted to this activity.* (Observation #003, Lines 4-25, 25/1/1988). *She explains on the board a planning table containing instructional objectives. Student teachers take notes and get ready to do classroom tasks in small groups.* (Observation #008, Lines 7-29, 1/2/1988).

Working in groups was a free-risk activity where student teachers might express teaching ideas in an unrestrictive fashion. This social organization-building was repeated almost routinely every day she was observed. She worked with groups moving from one to the other around the classroom to help groups succeed with the instructional assignment of the day lesson.

Observations relating to climate scales. Statistical class data were descriptive, and served as an estimate for the class climate profile:

> "Since the class means provides the best estimate of the colective student perceptions of the class, it should be used when one is examining different conditions of treatment accross classes" (Fraser, Anderson and Walberg, 1982: 4).

As I was concerned with Marisol's Pedagogy lesson environment, class means differences (n = 26) will be discussed. Climate appeared more strongly preferred in the ideal than the actual form, except in the **Classroom Management** dimension assessed in the 1990 class. Differences in classroom climate scales were the following: an actual mean score of 35.40 was obtained for **Cohesiveness**, while the mean score for the ideal was 42.44. For **Satisfaction** mean scores were 31.21 (actual form) and 42.53 (ideal or preferred form). While 34.98 was the actual mean score for **Personalization**, 46.21 was the mean score for the ideal mean score. Concerning the scale **Task Orientation**, a 30.74 mean score was obtained for the actual classroom climate, in opposition to the 41.58 for the ideal mean score. For the **Innovation** scale, student perceptions assessed the actual environment with a mean of 32.74, and a mean of 44.56 in the ideal form. **Evaluation** was the dimension with greater differences: whereas the mean score for the real climate was 30.02, the mean score for the ideal was 47.35. Finally, and as it had happened with the other three professors described above, **Classroom Management** was better assessed for the actual form (32.14) than the ideal version (24.23) of the IUCE.

During the two interview sessions we asked Marisol to talk about the IUCE climate profiles and also the field notes. Overall, Marisol characterized her interactions with student teachers as trying them to participate in learning activities. Student teachers were living a very conflicting 1988 academic year at the University of Sevilla. They went on strikes several times for a national teacher education reform proposal, and were very concerned with College exams and also with Marisol's final evaluation. This is why they wanted to have more self-evaluations, and scored so high Item 41 of IUCE ("In this classroom, students perform self-evaluations"):

> *Marisol: ... Now they (student teachers) say to me: "Instead of exams, we will hand you papers". Papers need to have a minimum quality. I would not admit a paper written in two days. What they do is copying from several books. They, even, take the chapters you have suggested as the only readings to elaborate the report. This is a no significant procedure to evaluate students. I can't assess them on this basis..."* (Interview #002, Lines 421-437, 16/6/1989).

CONCLUSIONS

Patterns Across Professors

Clearly two patterns of findings emerged from this research using the IUCE. First, in comparison with the emphasis student teachers perceived as being actually presented, all classes tended to prefer a more positive environment in terms of most scales assessed. Second, student teachers perceived their classes higher in control than being desired. It is noteworthy that these results in two College of Education classrooms assessed in two different academic course years were very similar. According to student teachers' perceptions, evidence showed the need to less routinize classroom management in College teaching.

Professor-centered style was related with Mathematics teaching. Professors emphasized conceptual and procedural knowledge that was "transmitted" by means of a sequence of rules sketched on the classroom board. It had a profound influence on the two professors the constructivist perspective on school Mathematics teaching. Besides professors had a common position concerning children learning, then, College Mathematical education focused on describing the meanings children place on their mathematical actions and procedural tactics. Two schemata were also inferred from data: posing math education problems in the classroom before practice teaching, and student teachers' use of resources to solve problem tasks.

Student-centered style seemed to be more related to humanistic attitudes about training. These two Pedagogy professors represented teacher trainers who believed that the primary goal of a College of Education lied in the realm of personal and social development, and that teaching knowledge was best acquired through social or group interaction. When all professors shared their reactions to lesson transcripts and climate profiles with the researcher, their reflections were fairly concise. They mentioned College of Education or teacher education programs as the main contextual factor that influenced their teaching.

Experienced professors showed an **expertise** in the active involvement of student teachers in the sharing and discussing content knowledge. They considered prospective teachers as adult learners striving to implement pedagogical theories in practice. Therefore, Colleges of Education should pay attention to developing expert professors and the expert teacher concept, if novice teachers are going to learn teaching by observing and acting like expert teachers:

> "To provide more appropiate educational experiences, teacher preparation programs should take into account not only what is known about the thinking and actions of experts, but also what is known about novices and the process by which novices become experts" (underlined mine) (Borko and Livingston, 1989: 492).

Explanations for Professors Teaching Differences

Whereas Math professors' propositional structures for content knowledge included examples of child development theory and Math demonstrations on the board for whole-class instruction, Pedagogy professors' pedagogical content knowledge and knowledge of student teachers provided a framework for small-group instruction. Math professors followed more or less scripted lesson plans, while Pedagogical professors displayed improvisational performances.

Professor Professional Development

Practicum experiences for professor development should include some of the informal and unstructured tasks and stages assumed and explored in this study: (i) professor development has been in stages (observation series-evaluation of classroom climate-reflective conferences or interviews); (ii) professor development has been sequential (it has taken a two-year flexible span of time); (iii) professor development has been the result of challenge (teacher education plans might change because of university and political factors); (iv) professor development needed a support system (researcher acted as an external consultant and promoted self-awareness) (Brown, 1985, 162).

This study has followed a coaching-like training process: a focused classroom observation and feedback in a psychologically safe environment (Villar, 1988b; Raney and Robbins, 1989, 37). Being observed by a colleague and doing reflective interviewing on climate dimensions are two basic activities, if a professor is to foster peer coaching in a College (Barnett, 1990: 62). Professors' knowing College of Education classroom learning climate could be considered an educational innovation that facilitate the acquisition of a reflective attitude towards their own teaching.

Limitations

This longitudinal study has provided some indications of improvement of professors as individuals. Follow-up classroom observations, as well as student responses to the IUCE, varied each year. Also research assistant groups changed each course. Then, results were based on a sample of students, shifting from one course to the following. Each professor selected the class to be observed. There was a restricted interview data collection for each professor (one interview per academic course). Professors were also student teaching supervisors. In one case (Marisol) College classroom activities were interrupted three months a year to attend school practice.

Implications

Findings reported here suggested that evaluations of classroom environment is an area worthy of further investigation. Measuring students' of classroom climate perceptions not only provided feedback to both prospective teachers and professors, but offered guidance at the teacher education program and institutional levels as well. Used in the teacher education/workshop environment, these case settings might become interesting sites for analytical professor teaching situations, which could then be discussed and evaluated.

Recommendations

A few universities and colleges planned faculty development activities and provided incentives for faculty. The majority relied exclusively on individual faculty effort and made only minimal investment. University faculty's professional development opportunities have typically taken the form of discrete inservice courses with predetermined format. Content emphasizing generic pedagogy should occupy a rising proportion of University staff development offerings, such as, for example, clinical teaching, cooperative learning and classroom management.

An emphasis on coaching teaching methods would enable College of Education supervisors get more involved in the psychosocial demands of University teaching. Classroom-based "coaching" would effect University teaching practice, because of professors' commitment to use innovations in their classroom. Further analysis should be done in the coded transcripts. Computer programs such as AQUAD (Huber, 1989) and The Ethnograph (Borko and Livingston, 1989) or heuristic schemata (Tochon, 1990) should be used to cluster concepts, analyse professor maps relationships and test hypothesis concerning professor change.

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Appendix. List of Codes

I. COH - Cohesiveness
- 1. CON - Trusting reationship
- 8. COM - Understanding
- 15. INF - Informal talk
- 22. CTT - Contact
- 29. AMI - Friendly relationship
- 36. LSO - Social place
- 43. COR - Cordial

II. SAT - Satisfaction
- 2. SIG - Significant
- 9. INS - Dissatisfaction
- 16. INA - Performance report
- 23. ASP - Aspirations
- 30. ENT - Enthusiasm
- 37. REO - Objectives revised
- 44. ESI - Ideas listened

III. PER - Personalization
- 3. RIT - Speed
- 10. HFR - Frankly speak
- 17. VTE - Variety of textbooks
- 24. CJU - Judgement trusting
- 31. AES - Student Alternatives
- 38. PAR - Participation
- 45. PRE - Concern

IV. ORI - Task Orientation
- 4. TDR - Decision making / Responsible
- 11. SIM - Simulation
- 18. DES - Disorganized
- 25. MED - Media
- 32. REM - Relations with teachers
- 39. CMO - Orientations changes
- 46. APE - Non-academic activities participation

V. INN - Innovation
- 5. RPS - Solve problems by themselves
- 12. AAC - Active learning
- 19. ICC - Invent, create, make things up
- 26. IRC - Research / solve matters
- 33. PPI - Research projects participation
- 40. PIT - Research promotion
- 47. ICE - Initiative / exploratory behavior

VI. EVA - Evaluation
- 6. EPE - Evaluation teaching-learning process
- 13. OBJ - Objetives
- 20. ARP - Program' requirement alternatives
- 27. PRC - Plan / carry out changes
- 34. CEP - Clear evaluation procedures

41. AUT - Selfevaluation
48. ASC - Learning in concrete situations

VII. GES - Classroom Management

7. REC - Academic relationships
14. PAP - Requirements imposed in programs
21. MCV - Verbal communication monopoly
28. PNL - Non logical presentation
35. IPR - Procedures information
42. LEC - Reading
49. RMO - One-syllable answers

OBS - Observer
PRO - Professor
ALV - Student
VA - Researcher
INT - Introduction
CLI - Profile
PER - Perceptions
GES - Management